

Domestically, a decision by the Commission to create multiple nationwide PCS licenses will have significant precedent, particularly in situations such as this "where such grants would expedite delivery of a new and innovative service to the public."<sup>31/</sup> The Commission in similar contexts has emphasized the benefits flowing from licensing services on a nationwide basis. Such benefits have included better overall satisfaction of the growing consumer demand for the service;<sup>32/</sup> expedited service availability flowing from a high degree of technical and equipment standardization;<sup>33/</sup> a superior ability to provide enhanced services through such standardization;<sup>34/</sup> easier and cheaper frequency and billing coordination;<sup>35/</sup> and stimulation of spectrum efficiency by providing incentives for investment, research and development in new technologies.<sup>36/</sup> As shown

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<sup>31/</sup> Notice of Proposed Rule Making, 4 FCC Rcd 8593, 8595 (1989) (Use of the 220-222 MHz Band By the Private Land Mobile Services) [hereinafter 220-222 MHz]; see 220-222 MHz, Report and Order, 68 RR2d 1654, 1665 (1991); Report and Order, 5 FCC Rcd 3861, 3869 (1990) (nationwide air-ground service) [hereinafter AirFone]; Memorandum Opinion and Order, 4 FCC Rcd 3802, 3804 (1989) (nationwide two-way mobile data communications network) [hereinafter AMDC]; Order, 3 FCC Rcd 427 (1988) (nationwide automatic train control system) ([hereinafter ATCS]; Memorandum Opinion and Order, 93 FCC2d 908 (1983) (nationwide paging systems) [hereinafter Nationwide Paging]; First Report and Order, 49 RR 2d 509, 514 (1981) (nationwide Digital Electronic Message Service) [hereinafter DEMS]. In addition, the Commission has tentatively granted a nationwide pioneer's preference to Mtel to offer PCS in the 900 MHz band, provided that multiple nationwide bands are assigned. See NPRM at 61, ¶ 151.

<sup>32/</sup> See 220-222 MHz, 68 RR 2d at 1665; SMR, 4 FCC Rcd at 8674-75; AMDC, 4 FCC Rcd at 3804; ATCS, 3 FCC Rcd at 427; Nationwide Paging, First Report and Order, 89 FCC2d 1337, 1346 (1982).

<sup>33/</sup> See AirFone, 5 FCC Rcd at 3869; DEMS, 49 RR 2d at 514.

<sup>34/</sup> DEMS, 49 RR 2d at 514.

<sup>35/</sup> AirFone, 5 FCC Rcd at 3869.

<sup>36/</sup> SMR, 4 FCC Rcd at 8675; 220-222 MHz, Report and Order, 68 RR 2d at 1665; 220-222 MHz, Notice of Proposed Rule Making, 4 FCC Rcd at 8595.

below, all of these and additional benefits will be realized if nationwide PCS authorizations are issued.

## **2. The Benefits of a Nationwide PCS License**

### **a. Standards Selection & Nationwide Roaming**

There are a variety of standards that could be adopted for PCS in the United States, including narrowband CDMA, broadband CDMA, DCS 1800 (the standard for British PCN), and several other alternatives.<sup>37/</sup> One of the most powerful benefits that nationwide licensees can bring to PCS is the early adoption and implementation of a set of technical standards on a nationwide basis.<sup>38/</sup>

Early selection of common PCS technical standards serves important policy goals:

- Facilitates the infrastructure needed to support nationwide roaming;
- Makes it easier for manufacturers to develop equipment necessary for PCS by assuming a nationwide equipment market for manufacturers;
- Permits the achievement of economies of scale in the production of network and terminal equipment;

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<sup>37/</sup> See Technical Supplement of Dr. Charles Jackson, "Technical Considerations Regarding the 'Size' of PCS Licenses," at 17-18 [hereinafter Jackson Supplement]. Dr. Jackson's Supplement is attached hereto as Attachment C.

<sup>38/</sup> See *id.* at 14-22; Kahn Affidavit at 10. Similarly, in discussing the economies that have driven the consolidation of the cellular industry into larger *de facto* service areas, the Commission has suggested that the same economies "may exist in PCS" such that PCS license with a large or nationwide geographic scope "may facilitate regional or nationwide roaming; allow licensees to tailor their systems to the natural geographic dimensions of PCS markets; reduce the cost of interference coordination between PCS licensees; and simplify the coordination of technical standards." *NPRM* at 25, ¶ 58 (emphasis supplied).

- Promotes rapid investment by service providers and manufacturers alike;<sup>39/</sup>
- Promotes the development of new markets;<sup>40/</sup>
- Promotes spectrum sharing with incumbent microwave users, as the latter users gain confidence that their links will not be interrupted by non-standard devices.

Conversely, until a set of technical standards is adopted:

it is difficult to envision the rapid development of an equipment industry exploiting what appear to be very large potential economies of scale. In view of the highly competitive character of the equipment industry, world-wide, it seems to me the advantages of an early start to our country in the exploitation of what might well prove to be an exploding market would be very great. Conversely, the issuance of 49 or 488 regions could well lose us the opportunity for first shot at that market.<sup>41/</sup>

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See Jackson Supplement at 15-16. Dr. Jackson considers the hypothetical consequences if the FCC had not chosen a standard for cellular (which at the time was not difficult because there was really only one standard available), but instead had left it to industry to choose among three equally good candidates:

Perhaps the industry would have agreed upon a single standard, but this would have required the agreement of dozens of firms just to cover the major markets. Another outcome might have been that all firms would have held back on investment, waiting to see which standard carried the day. Conceivably, different systems could have selected different standards. If different standards had been selected, roaming would have been greatly restricted or much more expensive. Economies of scale in production would have been sacrificed -- raising the cost of both network equipment and terminal equipment. Additionally, the smaller scale of the separate equipment markets might not have attracted as many entrants. With fewer entrants, these markets would have been less competitive, with the attendant consequences. Furthermore, cellular system operators and manufacturers could be expected to hold back investment until a preferred standard had emerged in the market.

Id. at 15.

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This often does not happen until a good standard provides a common platform for service competition. A well-known example in this regard is the fax machine. Before standardization, the market was essentially limited to point-to point applications where only machines from the same vendor could communicate. The adoption of a common standard by the manufacturers enabled full interconnectivity by all users to become possible and dramatically boosted marketplace penetration.

<sup>41/</sup>

Kahn Affidavit at 14.

The Commission essentially has two alternatives in attempting to set technical standards for PCS. The first alternative is for the Commission to do so directly, as it did over a decade ago in the case of cellular. In today's environment, however, this task is virtually impossible for the Commission to accomplish either quickly or efficiently.<sup>42/</sup> Indeed, the Commission itself has all but acknowledged in the NPRM and elsewhere that the myriad interrelated details of choosing technologies are better left to the marketplace.<sup>43/</sup>

Assuming, then, that the marketplace is left to set standards for PCS, the issue becomes which geographic licensing scheme best facilitates this process. In this regard, nationwide licenses offer significant advantages. First, nationwide licensees will have the resources and powerful incentives to settle upon a set of standards, and the ability to implement such standards promptly.<sup>44/</sup> They will also constitute a market or separate markets each large enough to induce equipment manufacturers to design and

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<sup>42/</sup> See Jackson Supplement at 21 ("Realistically, if the FCC had a \$10 million per year testing budget and was run by a single administrator who answered only to the President, and all the possible systems could be tested today, I would expect the FCC to take two to three years to set a standard. The current FCC with essentially no testing budget, committee decisionmaking at the top, and answerable to Congress and the President, would take the better part of a decade to choose PCS standards.").

<sup>43/</sup> The PCS standards proposed in the NPRM limit interference from PCS systems into existing microwave systems and set rules governing the spillover from one PCS license region into another; they do not involve issues such as channelization, modulation, voice coding, control procedures, or a host of other topics that must be addressed in any equipment standardization process. The proposed rules control harmful externalities, not the details of the choice of technologies. Jackson Supplement at 16. This observation is consistent with the Commission's refusal to involve itself in the setting of a digital cellular standard. See Remarks of Alfred C. Sikes, Chairman, Federal Communications Commission, Before the International Mobile Communications Conference, 1992 FCC LEXIS 3376 at \*5-\*6 (May 11, 1992) ("[T]here has been little regulatory involvement in the process of choosing a digital cellular standard. The FCC equipment rules are basically functional standards; they simply say that cellular phones have to be usable anywhere in the country. We don't, however, dictate technologies.").

<sup>44/</sup> See Kahn Affidavit at 13; Jackson Supplement at 21-22.

supply necessary equipment.<sup>45/</sup> In addition, nationwide licensees will have the incentives to choose the best PCS standards, because they will bear the costs if their standard choices turn out badly; if competitors make a better choice of technology, for example, nationwide licensees will calculate the respective costs of remaining with their original choices or of abandoning them and moving to the new technology.<sup>46/</sup>

On the other hand, leaving regional or local licensees to settle upon standards will increase the costs and significantly delay the speedy deployment of universal PCS in the United States. Professor Kahn observes:

It takes little imagination to visualize how messy and protracted the process would be. No one of the operators would initially represent a market large enough to justify entry on any efficient scale into the manufacture of the necessary equipment, and it would be a long and extraordinarily difficult process for a sufficient number of them to get together and settle upon some uniform set of specifications . . . in an environment of great uncertainty about future markets and technologies.<sup>47/</sup>

The ongoing attempt of the regionalized cellular industry to reach consensus on a national digital cellular standard supports Professor Kahn's prediction.<sup>48/</sup>

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<sup>45/</sup> Kahn Affidavit at 13.

<sup>46/</sup> Id. at 14; Jackson Supplement at 21.

<sup>47/</sup> Id. The Commission itself expressed similar sentiments in granting a nationwide license for Digital Electronic Message Service networks, reasoning that although nationwide service could evolve technically as a function of marketplace demand, regional networks "of independent, smaller-scale licensees would be very difficult to implement, requiring a very high degree of standardization and flexibility." DEMS, 49 RR 2d at 514.

<sup>48/</sup> See, e.g., Two Digital Cellular Standards Stymie U.S. Roaming, Computergram International (June 29, 1992) at CGIO6290009 (predicting that the CTIA's recent formal endorsement of CDMA alongside TDMA as the U.S. digital cellular standard will likely mean "further retrenchment by companies that have already decided which way to jump and have invested in appropriate infrastructure," and concluding that the "real losers will be both manufacturers who have already spent time and money developing TDMA handsets, as well as users "that will see the dream of pan-American roaming become more difficult to attain"); U.S Cellular World Faces Damaging Split as Code Division Standard is Endorsed, Computergram International (January 30,

In granting multiple nationwide licenses, the Commission can take a giant stride in avoiding a protracted technical standards battle in PCS.<sup>49/</sup>

Even with the benefits of an original common AMPS standard, cellular roamers face widely varying prices and different calling requirements from region to region.<sup>50/</sup> The Commission can dramatically reduce the impact of these problems in PCS by issuing at least two nationwide licenses, which will offer a truly seamless national network for roaming consumers.

**b. Speed of System "Rollout" and Consumer Access to PCS**

The Commission has continually underscored its commitment to ensure the rapid deployment and competitive delivery of PCS to the greatest number of U.S. consumers.<sup>51/</sup> As suggested above, the ability of nationwide licensees to adopt PCS

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1992) at CGIO1300017 noting (1) that the backing that CDMA is gaining "makes the development of a U.S. universal digital standard for cellular unlikely in the short to medium term"; (2) that the "nightmare scenario that could face the U.S. cellular industry is each standard being adopted in different regions, making region-to-region communication impossible, and leaving potential subscribers unsure of which type of phone to choose"; and (3) that "[w]hatever happens, Europe can sit back and watch" since it has already adopted the GSM standard); see also Electronic News (March 23, 1992) at 10 (noting that Europe "has jumped ahead in digital cellular radio standards, while the U.S. is still trying to resolve a digital cellular format fight between Motorola and rival hardware firms"); Telecommunications (January, 1992) at 62 (noting that the U.S. "is suffering from not being able to decide early enough on a digital cellular standard").

<sup>49/</sup> Even if nationwide licensees were to adopt differing technical standards, customers will be assured of nationwide roaming capability. In addition, the early assurance of a national market will still exist, providing equipment manufacturers with maximum incentives to produce terminal and network equipment. This will in turn speed the buildout of national systems (and thus the earlier achievement of ubiquitous coverage for PCS users). It ultimately will lead to availability of additional PCS services as network equipment becomes cheaper over time. It will serve to drive down the equipment unit manufacturing costs far faster, benefiting all PCS operators and consumers by lowering rapidly PCS backbone and customer terminal equipment prices.

<sup>50/</sup> See GTE and the Bells respond to McCaw's national challenge, Financial Times (February 13, 1992).

<sup>51/</sup> See, e.g., NPRM at 4, ¶¶ 6-7.

technical standards on an expedited basis will speed dramatically the construction of a nationwide PCS network. Nationwide licensees will also provide management with the legal control to design and construct a nationwide PCN in the most efficient configuration to serve the largest number of consumers.<sup>52/</sup> Such management and design efficiencies will speed the rollout of a PCS system that will likely serve a greater number of people more cheaply than cobbling together a national network of local or regional licensees after-the-fact.

In addition, the capital requirement for a nationwide PCS buildout will be a substantial one. A nationwide license, with its economies of scale and scope and elimination of the transaction costs of amalgamating smaller systems, will be much more attractive in terms of obtaining capital financing by providing tremendous investment incentives and reducing investment risk. Costs of financing should be lower in percentage terms. Awarding at least two nationwide licenses is thus a manner in which the Commission can, through the regulatory process, assure the success of PCS technology and service provision.

**c. Efficiency and Frequency Coordination<sup>53/</sup>**

The NPRM recognizes that large PCS service areas will reduce the costs of interference coordination between PCS licensees; a nationwide licensee offers the greatest opportunity for efficient channel management.<sup>54/</sup> Increases in the geographic

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<sup>52/</sup> Legal control, as opposed to loose confederations bound by rigid contract, provides greater ability to make business decisions more quickly, flexibly and effectively, particularly when marketplace circumstances unexpectedly change.

<sup>53/</sup> For a detailed presentation and discussion of this issue, see Jackson Supplement at 22-33.

<sup>54/</sup> See NPRM at 25, ¶ 58.

extent of an operator's service territory lead to efficiency increases in the operator's frequency reuse plan. This is because an operator that can extend its service territory into adjacent markets will reduce the need for frequency coordination at the boundaries of neighboring systems.

Imagine, for example, that Operator A and Operator B have abutting frequency-reuse systems that each operate in the same frequency block. Within their respective service territories, each Operator manages its frequency use on the basis of some channel reuse plan that increases the utilization of the spectrum while avoiding interference. At the boundary of the two systems, however, the two operators must coordinate their frequency use so as not to interfere with the other's operations. This coordination usually results in a loss of efficiency because one or both carriers will have to forego the use of some channels that their frequency reuse plans would otherwise permit.

If Operator A negotiates and acquires Operator B, the boundary between the two systems effectively disappears, and A can now manage its channel use over a larger area without the need to coordinate with B. To the extent that Operator A is able to expand and reduce frequency coordination with adjacent systems, it can more efficiently plan its channel management to match customer demand. Correspondingly, the greatest opportunity for efficient channel management, then, is a nationwide license, which completely eliminates the need for in-band frequency coordination.

Although a scheme of fragmented regions might ultimately achieve similar efficiencies, the expansion of Operator A's territory in the above example obviously incurs increasingly significant transactions costs as the number of geographically separate



PCS service territories increases.<sup>55/</sup> Moreover, although interference coordination across system boundaries has not been a major problem in cellular, the problem could be much more significant in PCS, given the lack of a Commission-imposed technical standard (as AMPS was imposed in cellular), the wide range of possible technologies, and market uncertainty.<sup>56/</sup> The Commission can allay this concern by authorizing some PCS licensees to offer nationwide service coverage.

**d.      Universality of Services, Interconnection Externalities and Marketing Benefits**

A nationwide licensee will bring particular benefits in terms of offering universal services to U.S. citizens by maximizing positive interconnection externalities. The value of any communications system to its subscribers often depends on how many others are on the same system. By this measure, a nationwide licensee is plainly in the best position to offer a most valuable service.<sup>57/</sup> This is particularly so with respect to innovative electronic mail or messaging PCS services that may develop, *i.e.*, services in which value could well depend upon the number of subscribers. Such services will likely grow faster and more evenly if offered and promoted by a nationwide carrier.<sup>58/</sup> Achieving this same value via separate interconnection agreements between many regions

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<sup>55/</sup> Jackson Supplement at 29-31.

<sup>56/</sup> See *id.* at 29.

<sup>57/</sup> Kahn Affidavit at 14.

<sup>58/</sup> *Id.* at 15.

will be difficult and time-consuming, especially as the number of geographically separate licenses to be brought together increases.<sup>59/</sup>

Nationwide licensees will also have significant advantages in developing new services and the market for them. As Professor Kahn explains, nationwide licensees are in the best position to incur the fixed costs of the innovation process because they would have the broadest possible market in which to recover them.<sup>60/</sup> These licensees can effectively market the new services, advertising and promoting them through the national media.

### **3. Preservation of Local Interests and Encouragement of the Maximum Amount of Diversity**

Several Commissioners have expressed concerns that licensing PCS on a national basis would be accomplished at the expense of localism, diversity, and the participation of smaller providers. Authorization of nationwide licenses, however, will actively promote competition and innovation in the PCS marketplace.<sup>61/</sup>

This is so because the benefits that nationwide licensees will provide can be combined with a licensing scheme that maximizes the number of PCS providers. As discussed infra, Bell Atlantic proposes that the Commission license the NPRM's maximum stated number of providers -- five. Making at least two of these providers nationwide licensees would allow customers in particular markets to realize the benefits

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<sup>59/</sup> Id.

<sup>60/</sup> Id.

<sup>61/</sup> See id.

that nationwide licensees offer them without reducing the number of competitors vying for their patronage.<sup>62/</sup>

As Professor Kahn observes, just as the goals of multiplicity and diversity argue for as large a number of licenses in each locality as is feasible they also call "for different kinds of licenses -- national, regional, local."<sup>63/</sup> Similarly, the NPRM acknowledges that the licensing plan for PCS "may enable national, regional, or local licensed operators to provide service in the same geographical areas," providing "a unique opportunity for each service provider as PCS services continue to evolve."<sup>64/</sup> The Commission can in effect pick the best of both worlds by authorizing nationwide licenses and regional or local licenses in order to preserve the innovation provided by other entrepreneurs.<sup>65/</sup>

In adopting a local service area scheme, the Commission need not "re-invent the wheel." Although not proposed as an option in the NPRM, the Commission should consider local licensing of PCS in accordance with the conventional MSA/RSA cellular scheme. The MSA/RSA scheme is proven and well established, unlike the untested Rand McNally local trading area scheme proposed in the NPRM. As the Commission recognized in its recent Interactive Video and Data Services ("IVDS") order,

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<sup>62/</sup> Id.

<sup>63/</sup> Id. at 11 (emphasis in original).

<sup>64/</sup> NPRM at 53, ¶ 130.

<sup>65/</sup> Indeed, this appears to be the Commission's precise approach in the DEMS proceeding. See DEMS, 49 RR 2d at 514-15 (adopting combined scheme of nationwide and regional networks in order to preserve innovation flowing from the "competitive pressures from smaller entrepreneurs").

which adopted the MSA/RSA regime for those services, the "cellular service areas are well known to the communications industry and cover the entire country."<sup>66/</sup>

### C. LICENSING MECHANISM

It is imperative that the Commission adopt some form of qualitative selection mechanism for nationwide PCS licenses. Ideally this mechanism would be competitive bidding -- for all licenses, for that matter -- if the Commission had the clear legal authority to implement it.<sup>67/</sup>

In the absence of an unambiguous congressional grant of auction authority, Bell Atlantic believes that nationwide licensees must be chosen by comparative hearing, given the scope, impact and value of these licenses. If the Commission chooses to employ lotteries for the licensing of local service areas, the Commission should impose high filing fees and strict financial and buildout requirements.

Bell Atlantic is aware that comparative hearings generally are not favored by the Commission. Nationwide licenses for PCS, however, are simply too important and valuable to allow for selection by lottery. Moreover, the drawbacks of comparative hearings can be mitigated by several factors.

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<sup>66/</sup> In the Matter of Amendment of Parts 0, 1, 2, and 95 of the Commission's Rules to Provide Interactive Video and Data Services, Report and Order, 7 FCC Rcd 1630, 1638 (1992).

<sup>67/</sup> Bell Atlantic supports fully the Commission's conclusion in Attachment D to the NPRM that competitive bidding "is superior or equivalent to lotteries and comparative hearings in all respects." As the Commission recognizes, all three proposed selection mechanisms would ultimately assign the license to who values it most, but competitive bidding would do so more quickly with less administrative cost, and would reduce the real private resources expended in seeking licenses. NPRM at 90, Attachment D; see also Kahn Affidavit at 2-3 (observing that auctions, if available, would be the way "to get the maximum social benefit from a scarce resource like the electromagnetic spectrum").

For example, as Professor Kahn observes, the Commission should "not graft onto this process all the baggage historically attached to comparative hearings for broadcast licensees--undertakings of public service commitments, for example, and subsequent comparisons of the promises by the successful applicants with their performance."<sup>68/</sup> In this regard, the Commission should impose the highest defensible application fee along with complete financial and technical showings and construction commitments and deadlines to assure that proposed licensees are capable of and intent upon building a nationwide system. Such measures should winnow the pool of nationwide licensees to the truly qualified applicants. Next, the Commission should adopt a streamlined hearing mechanism with comparative criteria focused on financial and technical capabilities.<sup>69/</sup>

Streamlined comparative hearings, although imperfect, represent a means by which the Commission can fulfill its public interest responsibility by directly selecting qualified nationwide license applicants, and awarding nationwide licenses only to those applicants who are technically advanced, and who possess the technology base and financial resources to roll out a ubiquitous nationwide PCS information network system. Streamlined comparative hearings empower the Commission to select companies which intend to make a long-term investment in and commitment to PCS service provision. Only if the Commission -- not ping pong balls -- makes these decisions, can it assure that

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<sup>68/</sup> Kahn Affidavit at 16.

<sup>69/</sup> See Kahn Affidavit at 16. Presumably, past experience and expertise in building and managing wireless or wireline systems would be viewed as a strength in the selection process. See ATV, 7 FCC Rcd at 3343.

this important technology will be implemented promptly -- and that licenses will not simply be "flipped" to generate speculator middleman profits.<sup>70/</sup>

### III. REGULATORY ISSUES

#### A. REGULATORY STATUS

Bell Atlantic believes that the Commission's rules should treat land mobile communication services, including paging and two-way messaging services, alike.

Currently, some of these services are accorded private carrier status while others, like cellular, are given common carrier status. In times past, when technology and regulation confined these services to rather well-defined and non-competing applications, this disparity in regulatory treatment was not of great importance.

Changes in technology, along with the increased flexibility that regulation now affords many radio carriers in providing their services sometimes create competitive overlaps between services that formerly did not compete with each other. Bell Atlantic finds problematic the skewed effect that disparate regulatory treatment of the services may have on marketplace competition by giving one service a wholly artificial advantage over another.

Overall, Bell Atlantic believes that given the large number of wireless service providers in every market -- two cellular carriers,<sup>71/</sup> several paging carriers (local and national), two-way messaging services, data networks, and possibly five PCS providers -- the question of common or private carriage for PCS be decided against the broader

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<sup>70/</sup> See Kahn Affidavit at 16-17.

<sup>71/</sup> With the forthcoming build-out of ESMR in many major markets, there may be three 800 MHz cellular providers in many American cities.

backdrop of how the provision of all wireless services should be treated. On this larger question, Bell Atlantic favors a regulatory regime that treats all of these functionally similar services alike.

#### IV. SPECTRUM ALLOCATION

Consistent with its "Emerging Technologies" proceeding,<sup>72/</sup> the NPRM proposes that 110 MHz of the allocated 220 MHz of "emerging technologies" spectrum be further allocated for PCS use (as the first "emerging technology"), and that remaining spectrum be held in reserve for other yet-to-be identified technologies or services.<sup>73/</sup> Of this 110 MHz, 90 MHz would be allocated for licensed PCS services among three PCS providers, while the remaining 20 MHz would be used on an unlicensed "Part 15" basis for devices offering high and low-speed data transmission or cordless telephony.<sup>74/</sup>

As explained in more detail below, Bell Atlantic proposes a five-provider scheme that will allow PCS providers to be competitive with spectrum allocations of 18-20 MHz apiece. If PCS is to flourish, however, the Commission should allocate more than the 90 MHz of 2 GHz PCS spectrum that it has proposed thus far for licensed PCS services. By earmarking additional spectrum already allocated for emerging technologies, the Commission can easily ensure that the public receives the competitive benefits provided by five PCS licensees and that each licensee has sufficient spectrum to achieve

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<sup>72/</sup> See In the Matter of Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, First Report and Order and Third Notice of Proposed Rule Making, ET Docket No. 92-9 (Sept. 17, 1992). The Commission allocated the 1850-1990, 2110-2150, and 2160-2200 MHz bands for future services that use emerging technologies.

<sup>73/</sup> NPRM at 14, ¶¶ 31-32.

<sup>74/</sup> Id. at 16-18, ¶¶ 37, 44.

adequate efficiencies of scale and scope, and to develop innovative service offerings. The allocations should also be configured to achieve rough parity with cellular allocations, so that wireless providers in a locality will have equivalent capacity to assure full and fair competition.

**A. THE COMMISSION SHOULD LICENSE FIVE PCS PROVIDERS**

The Commission has tentatively concluded that any spectrum allocation should support a minimum of three service providers per market, but seeks comment on the advantages of 4 or 5 providers, suggesting that "innovation could result from the licensing of additional PCS service providers."<sup>75/</sup> The Commission should seek to maximize competition, diversity and innovation in the provision of personal communications services by licensing five PCS providers.

At the outset, Bell Atlantic recognizes that the Commission faces a tradeoff between the number of licenses to be awarded and the size of spectrum blocks to be allocated; the more spectrum that is allocated to an individual licensee, the more the licensee can take advantages of economies of scale and scope. Other things being equal, however, the public interest benefits flowing from the likelihood of effective competition argue on the side of maximizing the number of PCS licensees.<sup>76/</sup>

Putting aside for the moment the size of the spectrum blocks to be assigned to each licensee, which is addressed below, five PCS licenses per market would be an optimal licensing number for assuring the robust, competitive development of innovative

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<sup>75/</sup> Id. at 15, ¶ 34.

<sup>76/</sup> See Kahn Affidavit at 6.



services, and in the process, maximizing the four cardinal values that the Commission has espoused in implementing PCS. Advantages to a five-licensee scheme include:

■ **Competition, Innovation and Diversity**

Allowing five service providers to compete in a given market will minimize any potential threats to competition, and will maximize the important public interest benefits realized by providing as open and competitive a PCS marketplace as possible, where "customers will be able to negotiate with multiple service providers to obtain the best rate and service possible."<sup>77/</sup> As the Commission has suggested, a larger number of licensees will maximize the public interest benefits of facilities-based competition, providing the greatest possible opportunity and stimulus for competitive innovation.<sup>78/</sup> Correspondingly, providing for five licensees in each locality will enable the public to realize the benefits flowing from a diversity of service providers, including the important benefits offered by nationwide licensees, as well as the benefits of allowing PCS licenses to be held by cellular licensees and/or local exchange carriers within their service territories.

■ **Efficient Use of the Spectrum**

By increasing the effective level of competition in each market, maximizing the number of PCS licensees will enhance the ability of the competitive market to make the most efficient use of the spectrum. Vigorous competition will foster economic efficiency and lower provider cost structures. In a competitive environment, this should

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<sup>77/</sup> NPRM, Statement of Commissioner Sherrie P. Marshall (July 16, 1992).

<sup>78/</sup> See NPRM at 15, ¶ 34.

drive prices closer to costs, thereby stimulating greater user demand, higher subscriber penetration levels, and promoting spectrum efficient systems to better accommodate the greater demand.

■ **Market Determination of the Most Efficient Number of Providers**

In this nascent stage of the development of PCS, the Commission's initial allocation decisions will inevitably be based upon speculation as to what the future market for PCS will look like, particularly as technology and services evolve. There is obviously no way to establish before-the-fact the optimal number of providers in PCS markets. Given that such is the case -- provided that PCS licenses permit alternative uses and can subsequently be purchased and sold -- the Commission should risk erring on the side of creating too many licensees in the interests of maximizing the effectiveness of competition.<sup>79/</sup>

If PCS allocations prove to be inadequate, and involve excessive sacrifice of the economies of operating on a larger scale, the presence of a PCS aftermarket will enable providers to consolidate spectrum in order to compete more effectively.<sup>80/</sup> In this regard, allowing for market correction of possible errors in creating too many PCS licensees will prove to be much more efficient and effective administratively than market correction of too few licensees if competition proves to be ineffective. A dominant competitor will naturally be reluctant to sell off part of its operating rights to enhance

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<sup>79/</sup> Kahn Affidavit at 7.

<sup>80/</sup> Id.

competition, and the Commission will therefore almost surely have to intervene to break up the offending entity.<sup>81/</sup>

A free aftermarket in PCS operating rights would, of course, be subject to the same antitrust considerations of any subsequent purchase and sale of other business assets.<sup>82/</sup> Its presence, however, will assure that marketplace forces dictate the optimally efficient number of PCS providers in each market.<sup>83/</sup> If a particular market cannot support five PCS providers each with an allocation of say, 18, 20 or 24 MHz, the aftermarket will insure that consolidation of spectrum is possible in order to provide competitive and efficient PCS spectrum use.

#### **B. LIMITS ON HOLDING MULTIPLE LICENSES**

The Commission should not limit PCS operators to one license each in a locality, nor should it impose any kind of blanket spectrum "cap" upon PCS providers. As Professor Alfred Kahn suggests, such mechanisms would severely constrict the development of a spectrum aftermarket, which is crucial to assuring that competitors in PCS markets make the most efficient use of the spectrum.<sup>84/</sup> For example, as discussed

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<sup>81/</sup> Id. & n.7.

<sup>82/</sup> As explained below, the Commission can promote certainty and reduce delay in policing spectrum merger transactions by establishing number-of-MHz boundaries for expressly permitted consolidations within the PCS spectrum, with case-by-case treatment only of proposed consolidations falling outside those bounds.

<sup>83/</sup> The Commission's "most desirable" spectrum allocation would be one that accommodates all entities interested in providing PCS services; the Commission would then allow market forces to determine the optimum number of service providers. NPRM at 15, ¶ 34. By authorizing five PCS service providers with a free operating rights aftermarket, the Commission can, insofar as is possible with limited spectrum, allow marketplace forces to determine the optimum number of service providers for a given locality.

<sup>84/</sup> See Kahn Affidavit. at 3, 6-7.

previously, Bell Atlantic believes that the Commission should license a large number of PCS providers -- five; because different markets have varying needs, the presence of a free aftermarket (subject, of course, to antitrust considerations) helps to ensure optimal number of competitors in the optimal spectrum configurations in particular markets, e.g., those that may not support five licensees, or which require different allocations of spectrum among the five. This flexibility is particularly important given the technological uncertainty that currently exists in this early stage of PCS development.

Bell Atlantic recommends that the Commission follow the current practice in cellular and not specify any particular standard with respect to PCS merger questions. The Commission should review merger and acquisition questions on a case-by-case basis to establish whether particular spectrum consolidations are likely to impair competition in a given market.<sup>85/</sup> In order to promote certainty and reduce delay in this process -- two key components to the creation of a workable aftermarket -- the Commission should establish number-of-MHz boundaries for expressly permitted consolidations within the PCS spectrum, with case-by-case treatment only of proposed consolidations falling outside those bounds. Given the large number of wireless providers present in each locality and possibly five PCS providers, Bell Atlantic proposes that any proposed PCS spectrum consolidation which results in common control of not more than fifty percent of such spectrum and a minimum of three independent PCS providers in the affected locality shall be deemed in the public interest.

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<sup>85/</sup> See id. at 8.

### C. SIZE OF SPECTRUM BLOCKS AND BLOCK ALLOCATIONS

To allocate a fixed block of spectrum involves a trade-off between the technical efficiency of the service providers' networks and the number of competing service providers licensed. In general, the fewer the licensees among whom a given block of spectrum is divided, the greater the total amount of traffic the licensees as a whole can carry for a given Blocking Probability. (This is because trunking efficiency increases with larger blocks.) Balanced against this consideration is the social and economic value of having as many service providers as possible. This trade-off was especially difficult with cellular radio service, since licensing even two carriers imposed significant efficiency costs.<sup>86/</sup>

In his affidavit, Dr. Jackson shows that, if the FCC's proposed scheme for allocating the 90 MHz block among three licensees is given a nominal efficiency rating of 100%, dividing that same 90 MHz among five licenses produces an efficiency loss of only 2.1%. Thus, the losses in efficiency are relatively modest when the number of systems lies in the range of the three to five suggested by the Commission in the NPRM. This means that "[g]iven that technological measures of efficiency do not vary significantly over the bandwidths of interest, non-technical criteria -- criteria founded in economics or in social considerations -- should be controlling on the decision of the appropriate bandwidth for PCS systems."<sup>87/</sup>

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<sup>86/</sup> Jackson Supplement at 11.

<sup>87/</sup> Id. at 13-14.

The Commission could, then, allocate the 90 MHz it has set aside for PCS among five carriers, each of whom would have about 18 MHz with which to work. This should be enough bandwidth to construct competitive PCS systems.<sup>88/</sup> Moreover, such an allocation among five providers would maximize competition without imposing severe efficiency costs on the networks.<sup>89/</sup> By allocating an additional 10 MHz to account for possible sharing with incumbent microwave users, the Commission could award five 20 MHz blocks as follows:

**PLAN A**

| <b>Paired Blocks</b> | <b>Channel Use Plan</b> |
|----------------------|-------------------------|
| 1850-1860            | PCS Block A             |
| 1930-1940            |                         |
| 1860-1870            | PCS Block B             |
| 1940-1950            |                         |
| 1870-1880            | PCS Block C             |
| 1950-1960            |                         |
| 1880-1890            | PCS Block D             |
| 1960-1970            |                         |
| 1890-1900            | PCS Block E             |
| 1970-1980            |                         |

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<sup>88/</sup> Id. at 3.

<sup>89/</sup> Id. at 8-14.

The allocation scheme proposed above in Plan A has various advantages. It provides for five PCS providers and therefore maximizes competition and diversity in the PCS marketplace. It also adopts a traditional paired block separation of 80 MHz as suggested in the NPRM, and provides for the proposed 20 MHz allocation for unlicensed PCS in 1910-1930 MHz.

**1. The Commission Should Consider Allocating Additional PCS Spectrum**

While 18-20 MHz blocks should provide enough spectrum to offer certain competitive PCS offerings (which in turn argues for maximizing the number of PCS service providers), true PCS innovation may require considerably more bandwidth. Although it is true that newer digital technology including digital transmission with TDMA or CDMA, low bit rate speech CODECS, and microcells can increase the voice capacity in current mobile cellular by a factor as high as ten, these techniques are currently at odds with the PCS goals of low-cost handsets and lower per call costs. In addition, PCS should have the opportunity to develop additional new non-voice services, such as broadband, medium, and high-speed data, imaging and ISDN-like offerings -- most of which are not available from cellular operators due to spectrum limitations and an initial focus on the provision of mobile voice services. In other words, the Commission should not gauge bandwidth requirements for PCS using the old paradigm of cellular, whose logic will hinder the potential of PCS to provide quite different services.

As discussed above, the Commission should make every effort to maximize the number of PCS licensees in order to stimulate competition, drive costs down and encourage delivery of PCS services in an efficient manner. Providing five PCS licensees

with spectrum allocations at least on parity with cellular (approximately 25 MHz) should allow significant opportunities for each licensee to expand traffic and service beyond that offered by mobile telephone service. Such a scheme will obviously require the allocation of additional bandwidth. There are important economic and policy reasons for the Commission to do so.

Providing more spectrum will reduce carriers' costs of providing the service, thereby making PCS less expensive for the consumer.<sup>90/</sup> In addition, as mentioned, allocating additional spectrum will permit the development of innovative service offerings that require greater bandwidth. On the other hand, a failure to allocate sufficient spectrum could, in the long term, have an adverse effect on competition. Licensees' ability to expand services and coverage and to adapt to new customer needs and technologies will be constrained by the availability of spectrum.

The growth and success of cellular radio service is a good indication of how highly the public can be expected to value personal communications services.<sup>91/</sup> The voice, data, and other services that the PCS definition encompasses argue for more rather than less spectrum to be allocated now if these high quality services are to be provided rapidly by multiple providers at low cost.

Moreover, in light of the Commission's broad and flexible definition of PCS, which overlaps with and encompasses many "emerging technologies," there is no

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<sup>90/</sup> According to the cost/traffic model presented in Dr. Jackson's technical supplement, it is "highly likely that providing PCS operators with additional spectrum will allow them to offer services at lower cost." Jackson Supplement at 8. Under some reasonable and technical market assumptions, increasing bandwidth available to an individual PCS licensee lowers the capital costs per subscriber by a corresponding amount. Id. at 14.

<sup>91/</sup> See Kahn Affidavit at 4-5.



need to warehouse large portions of "emerging technologies" spectrum for future spectrum block use. Instead of becoming embroiled in contentious additional rule makings and licensing proceedings to dole out small additional portions of the "emerging technologies" spectrum, innovators can approach PCS licensees directly with the knowledge that a flexible PCS backbone and infrastructure exists to accommodate their new service offerings. Such an expeditious deployment of new services can only occur, however, if the PCS providers have sufficient spectrum capacity to support the new offerings.

## **2. The Commission Should Consider Allocating PCS Spectrum in Contiguous Blocks**

Although its proposed channelization approach has obvious strengths, the Commission may wish to consider a different approach to spectrum allocation in order to maximize flexibility of PCS service development.

The proposed block allocations based on three licensees in the NPRM are paired such that each licensee would get two pieces of spectrum (in the example, two 15 MHz segments separated by 80 MHz as in current mobile cellular).<sup>92/</sup> The pairing appears to give preference to symmetrical, frequency division duplex ("FDD") operation and imposes a high level of channelization on licensees.

Other block allocations are possible which do not restrict an operator from taking advantage of the opportunities in having a contiguous spectrum band. A contiguous band assignment would leave the engineering decision of how to best use the

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<sup>92/</sup> NPRM at 17, ¶ 34.